

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

REVISED SYNTHETIC MINOR DRAFT PERMIT NO. F-00-021 (REVISED)

ATOFINA CHEMICALS, INC.

CALVERT CITY, KY.

JANUARY 25, 2002

KENNETH LIBERTY, REVIEWER

PLANT I.D. # 21-157-00007

APPLICATION LOG #54330

SOURCE DESCRIPTION:

F-134a Thermal Oxidizer System

The F-134a thermal oxidizer system (EP Q5) is used to control certain vent streams from the ATOFINA Chemicals, Inc.'s Calvert City plant. The system consists of a thermal oxidizer, quench, venturi scrubber, and two packed bed scrubbers, all in series. Used scrubber liquid is neutralized prior to treatment in the wastewater treatment system. See **Types of controls and efficiency** for details of the system.

Refrigerant Receiving, Storage, Blending, and Handling

The refrigerant handling facilities consist of loading/unloading stations, product recovery condensers, pressurized storage vessels, and pipeline equipment. New pipeline equipment must be added to accommodate the R-22 transloading and blending process.

COMMENTS:

This permit is being issued to authorize an increase in the hourly feed rate limit for the existing F-134a thermal oxidizer (EP Q5), and for a modification of existing refrigerant receiving, storage, and loading facilities to allow for handling and blending additional refrigerants.

Applicable regulations:

None

Non-Applicable regulations:

401 KAR 51:017, Prevention of significant deterioration of air quality, does not apply because of the permitted synthetic minor limit and netting analysis for ODS. See the **Netting Analysis for ODS up to Permit F-00-021 (Revised)**.

401 KAR 59:020, New Incinerators

40 CFR 60, Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry that commences construction or modification after January 5, 1981.

40 CFR 63, Subparts F, G, H, and I, "HON Rule"

40 CFR 63, Subpart B, Requirements for Control Technology Determinations for Major Sources in Accordance With Clean Air Act Sections, Sections 112(g) and 112(j) ("Case by Case MACT")

Types of controls and efficiency:

F-134a Thermal Oxidizer System

The F-134a thermal oxidizer (T.O.) system (EP Q5) (with 100% collection efficiency) consists of a thermal oxidizer, quench, venturi scrubber, and two packed bed scrubbers, all in series. This system achieves: 99.99% removal for VOC, ODS, and HF; 99% removal for CO and Cl₂; and 99.95% removal for HCl. Used scrubber liquid is neutralized prior to treatment in the wastewater treatment system. An additional scrubber is being added prior to the T.O. to reduce HCl throughput to the T.O.

Refrigerant Receiving, Storage, Blending, and Handling

Refrigerant displaced during loading operations is recovered by process recovery devices (condensers) and returned to pressurized storage vessels. The condensers are process recovery devices, and not air pollution control devices. All other emissions are fugitive.

Emission factors:**F-134a Thermal Oxidizer System**

Potential F-134a thermal oxidizer system emissions were calculated using worst-case vapor stream flow rates and compositions of either 100% VOC, 100% HAP, or 100% ODS. HCl, HF, and Cl₂ emission factors are based on worst-case amounts of F and Cl present in the vapor streams controlled by the thermal oxidizer. Natural gas and fuel oil products of combustion were calculated using emission factors from AP-42 Sections 1.3 (9/98) and 1.4 (7/98 and 2/98).

Refrigerant Receiving, Storage, Blending, and Handling

Refrigerant receiving and loading emissions were calculated by mass balance. Pipeline equipment emissions were calculated using SOCM I Leak Factors.

Periodic Monitoring:**F-134a Thermal Oxidizer System**

The source is required to continuously monitor the combustion chamber temperature, total vent gas feed rate, and stack gas CO concentration. The permit also contains specific ranges or limits for each of these parameters. The thermal oxidizer is equipped with automatic interlocks that will cut off the waste feeds if oxidizer operating conditions deviate from the permit ranges. In the event of a thermal oxidizer waste feed cutoff, the computer control system automatically closes all but one of the vent lines that are required to be controlled by the oxidizer. It is not possible to immediately shut down the F-134a gas phase HCl column vent without damaging the catalyst.

Refrigerant Receiving, Storage, Blending, and Handling

To ensure that ODS emissions do not exceed the annual values used in the PSD non-applicability netting analysis (see **Netting Analysis for ODS up to Permit F-00-0021 (Revised)**), the source will be required to record monthly refrigerant loading and unloading, and calculate 12-month totals.

EMISSION AND OPERATING CAPS DESCRIPTION:**F-134a Thermal Oxidizer System**

Under permit F-00-021, federally enforceable emission limitations were imposed to avoid the applicability of PSD for PM₁₀, NO_x, SO₂, CO, and VOC. These limits are to ensure that the potential emissions due to the construction of the F-134a plant do not exceed the PSD net significant emission rates. These limitations are not being changed by this permit revision.

Refrigerant Receiving, Storage, Blending, and Handling

The refrigerant loading and unloading limits are designed to ensure that the potential ODS emissions do not exceed the values used in the contemporaneous netting analysis, and therefore do not exceed the PSD significance level.

OPERATIONAL FLEXIBILITY:

N/A

CREDIBLE EVIDENCE:

This permit contains provisions that require that specific test methods, monitoring and recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.

Contemporaneous Netting Analysis up to Permit F-00-021 (Revised)

| | Permit Description | Permit | Date of Emission Change | Pre-change Actual TPY | Post-change PTE TPY | Emissions Change TPY |
|---|--|--|-------------------------|-----------------------|---------------------|----------------------|
| 1. | Kynar Monomer Plant Lights Column control | <i>F-97-002</i> | Mar-97 | 145.68 | 35.09 | -110.59 |
| 2. | F-134a Plant startup | C-93-163 S-94-185 F-97-002 | Mar-97 | see #7 below | | |
| 3. | Kynar Monomer Plant Lights Column yield improvements and 12 TPY ODS permit limit | <i>F-98-023</i> | Nov-98 | 35.09 | 12 | -23.09 |
| 4. | Kynar Polymer Plant F-11 usage rate limit | <i>F-98-023</i> | Nov-98 | 41.45 | 37.69 | -3.76 |
| 5. | Kynar Monomer/Polymer Plants production increase | <i>F-98-023</i> | Nov-98 | 16.56 | 27.51 | 10.95 |
| 6. | Kynar Polymer Plant F-11 usage rate limit increase | <i>F-98-023(Rev)</i> | Jan-00 | 37.69 | 75.38 | 37.69 |
| 7. | F-134a Plant startup & expansion | C-93-163 S-94-185 F-97-002 F-00-021 | Jul-00 | 0 | 22.46 | 22.46 |
| 8. | General Remediation & Vapor Treatment System | <i>F-00-030</i> | Nov-00 | 0 | 0.89 | 0.89 |
| 9. | F-134a Thermal Oxidizer feed rate limit increase | <i>F-00-021 (Revision)</i> | Mar-02 | 0.295 | 2.85 | 2.60 |
| 10. | R-22 and blends receiving and loading | <i>F-00-021 (Revision)</i> | Mar-02 | 0 | 21.12 | 21.21 |
| Contemporaneous Net Emissions Change | | | | | | -41.73 |

Italicized permit number refers to permit which made the reduction federally-enforceable